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## <u>History</u>

- 1994 political agreement between GLOBE and chancellor Kohl
- Dec. 1995 formal agreement between USA and Germany
  Funding through the Federal Ministry for education
  and research
- Febr. 2005 national coordination by IPN under guidance of Prof. Dr. Bayrhuber
- May 2007 now Prof Dr. Ute Harms

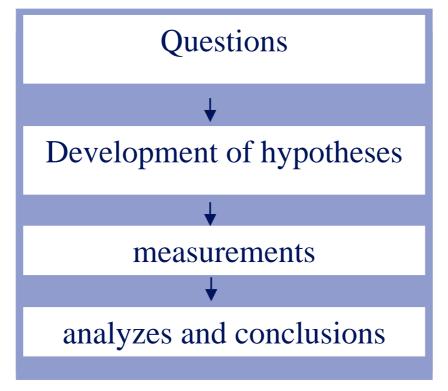




#### Goals

To improve scientific knowledge by using scientific

methods



Adaptation of GLOBE to our educational standards





### **GLOBE Team**

Birgit Rademacher
Biology

Mark Müller ecologist

Country coordination,

Organisation etc.

lesson materials,

**Evaluation** 

Leibniz-institute for science education at the university Kiel (IPN)





### **Facts**

Germany has 16 federal states

Basic vocational training year Secondary General school Class 5(7) -9	Intermediate school Class 5(7) - 10	Class 10 -13  Grammar school Class 5(7)-10	Comprehensi ve school Class 5(7)- 13	
Orientation stage (5/6)				
Primary schools 1- 4				
kinder garden				



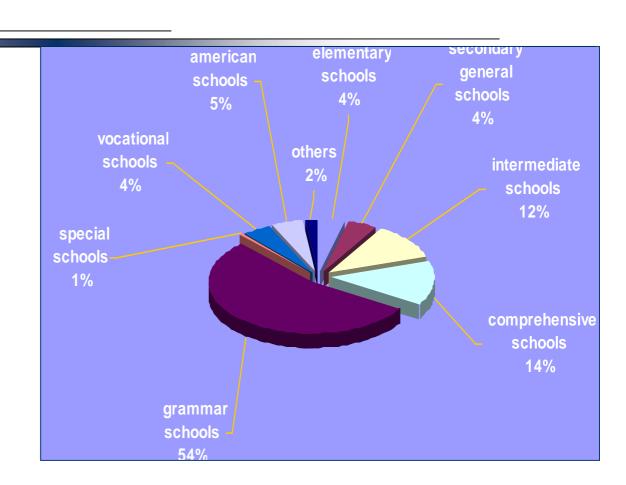


#### **Facts**

schools: 525

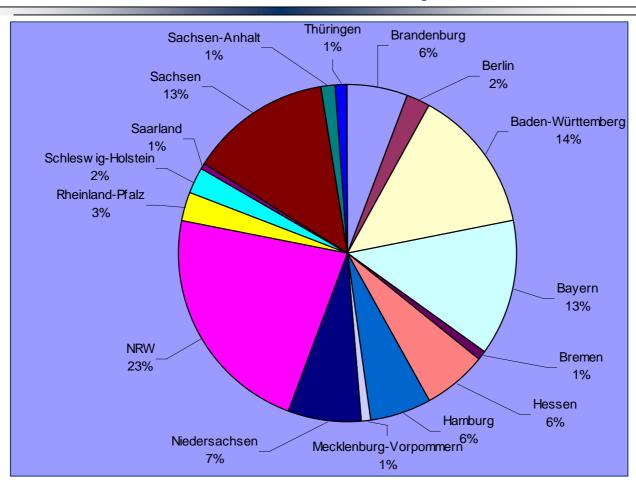
teachers: 796

data: 1.201.345





## GLOBE school in % per federal state







### Regional coordination

- Net of regional coordinators
- regular regional meetings
  - □ reports from all federal states
  - Planning teacher training
  - common projects
  - strategies for public relation
- Mailing list











### Advisory board

- a group of scientists and educators under the presidency of Prof. Dr. Mojib Latif
  - support for schools and teachers
  - presentations with actual scientific information
  - observing the quality of measurements e.g. visiting schools, controlling the position of weather stations
  - □ special events









#### Net of sientists

- Scientists responsible for special GLOBE protocols
- 5 contact persons for questions in
  - hydrology and macro invertebrates,
  - □ soil,
  - phenological garden,
  - □ atmosphere and climate
- Visiting schools and take part in our forum at the website and are responsible for their strands









### **GLOBE Germany School 200X**

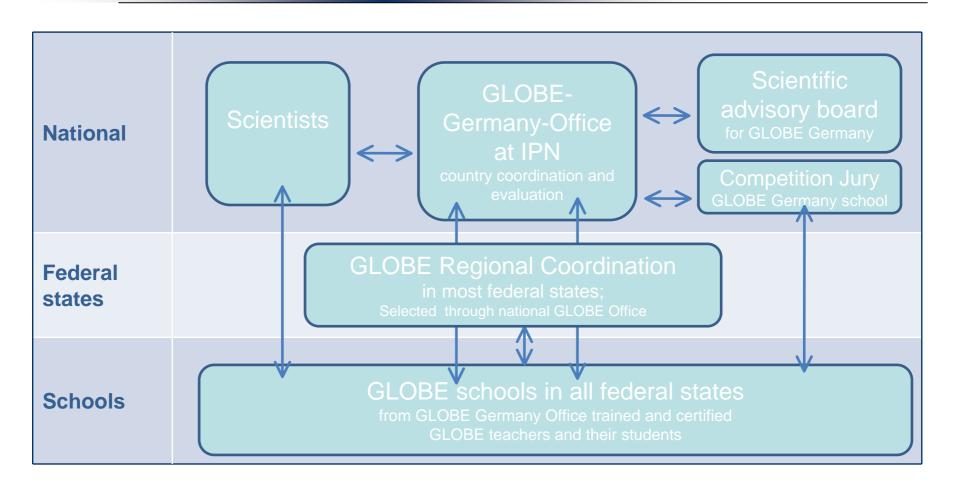
- criteria for certification
  - □ team of GLOBE teachers
  - signed agreement by the director or implemented in school profile
  - public relation in and out of the school
  - regular measurements in at least one protocol
  - □ context based project
  - communication to other schools or scientists
  - adapted to educational standards
- Sponsors
  - ☐ Brain Game, Fielmann, Terzio, European climate forum etc.







#### Structure overview





Maturwissenschoften
GLOBE Germany

Leibniz-Institut für die Pädagogik der

## Communication and public relation

- GLOBE Germany Homepage
  - □ Forum
  - □ newsletter "GLOBE aktuell"
- information material (Poster)
- article in newspaper, exhibits etc.













## teacher trainings / meetings

- teacher trainings
- german-swiss phenological conference
- annual students congress
- Annual GLOBE meeting
- regional meetings











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**GLOBE 2007** 

### Project: Phenological garden



- plants with the same DNA
- cooperation with a scientist from the University of Berlin
  - □ use of data for climate modelling
  - □ Feedback





Phenologic	al Gardens	
Data Sheet		
School Name:	Class or Group Name:	
Name(s) of student(	s) filling in Data Sheet:	
Site:		

For witch hazel, mock-orange, heather and snowdrops, record the dates for the following flowering stages:

i i	Flowering Stage		
Shrub	BF	GF	EF
Witch Hazel 'Jelena'			/
Snowdrops			7
Mock-Orange			
Heather 'Allegro'			8
Heather 'Long White'			20 0
Witch Hazel 'Genuine'			y

BF = Beginning of flowering GF = General flowering

EF = End of flowering

For lilac and forsythia, record the dates for the following flowering and leaf growth stages:

	Flowering Stage		Leaf Stage		
Shrub	BF	GF	EF	LU	FL
Lilac					9
Forsythia					

LU = Beginning of leaf unfolding

FL = Full leafs

Height of each plant. Measure in the autumn

Shrub	Height (cm)
Witch Hazel 'Jelena'	
Snowdrops	-
Mock-Orange	
Heather 'Allegro'	
Heather 'LongWhite'	
Lilac	
Forsythia	

Comments (Metadata): _	



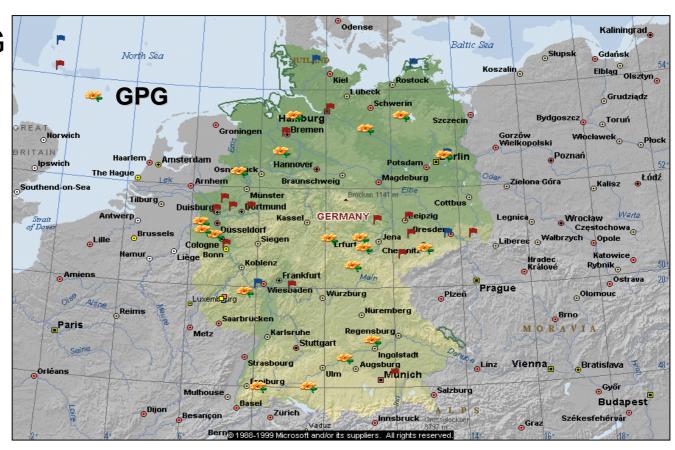


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## <u>Project: Phenolog</u>ical garden 🤏



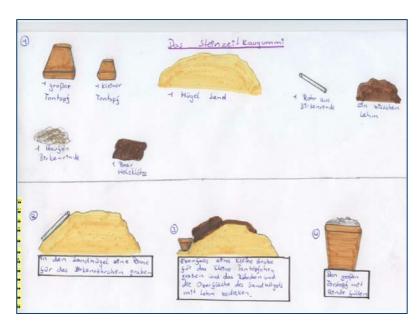
**29 GPG** 





## Project: Birch tree

- Observation of budburst, greenup, -down
- Growing degree summation
- Production of Chewing gum and hair tonic





GLOBE 2007



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GLOBE 2007

## Project: Earth day

- Call for measurements in one week
  - data entry on our website
- regional activity (hydrology, climate, landcover)
  - □ with several schools
  - □ together with environmental associations







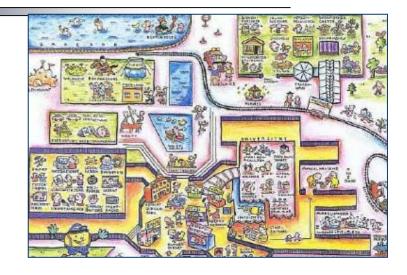




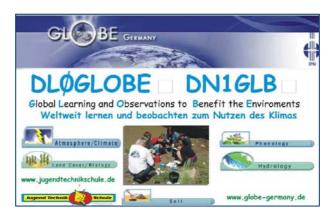


## **Project: Fez City**

- City for kids with
  - □ Employment office
  - □ special money
  - □ Globe laboratory
  - □ Globe Code for radio messages







## Cooperations

- Ministries like the
  - federal ministry of nature conservation homepage for "nature detectives"
     "Travel to the fantastic land Planktonia" several materials like worksheets etc.
- Institutes like
  - □ Multimar Wattforum (project coast watch)
  - □ University of Heidelberg (international study)



**GLOBE German** 





## **Evaluation**

evaluation	Data evaluation (2003-2006)	Online-questionnaire for teachers	questionnaire for students
basis	Former evaluations 1996- 2003	Former reports and questionnaires regional coordinator questionaire Participants (annual meetinjgs)	ROSE-questionnaire Action-Interviews
topics	<ul> <li>Amount of GLOBE-schools</li> <li>Frequency of measurements</li> <li>Measurement areas</li> </ul>	<ul> <li>Motivation of teachers and students</li> <li>activities &amp; measurements</li> <li>Type of implementation</li> <li>student competencies</li> </ul>	<ul><li>Motivation/ interests</li><li>activities</li><li>competencies</li></ul>
when	Mai/Jun 06	Okt - Dez 06	2007

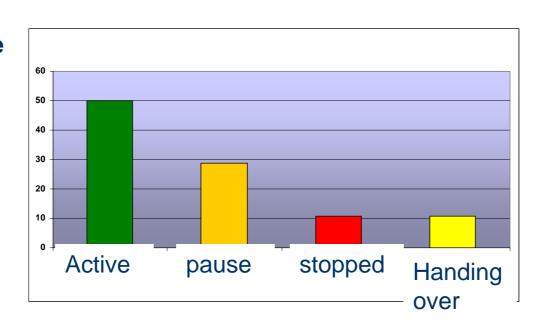




## **Evaluation**

#### Participants

#### percentage



teachers

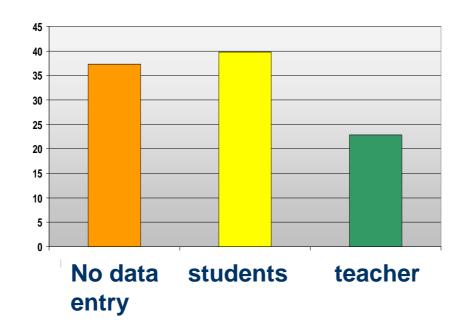




## **Evaluation**

Results for data entry

#### percentage







#### **Evaluation**

#### Implementation

#### Which school types?

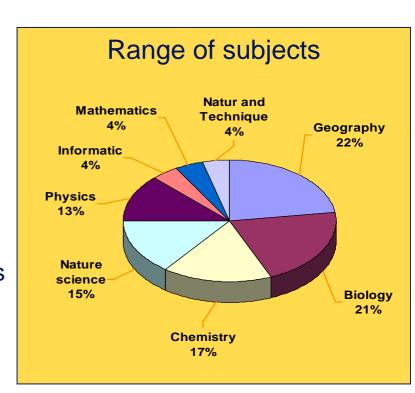
in all school types
 from elementary to even vocational schools

#### Where in schools?

- in normal lessons
- in optional courses
- in working groups and in Enrichment courses
- in Project days and weeks

#### Which subjects?

in all scientific subjects





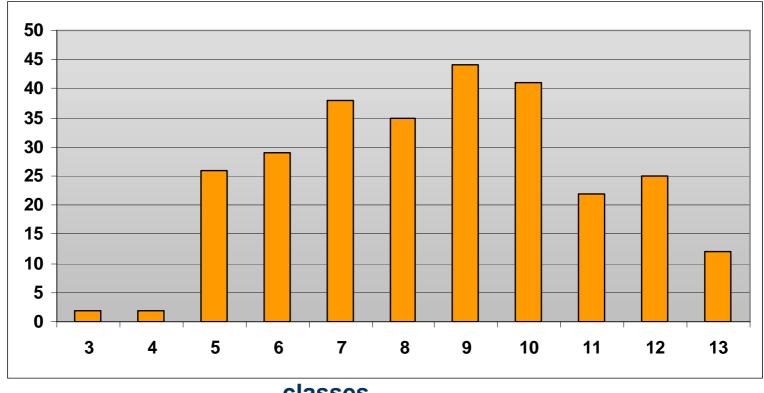


die Pädagogik der Naturwissenschaften

## **Evaluation**

### Implementation of GLOBE

#### percentage



classes

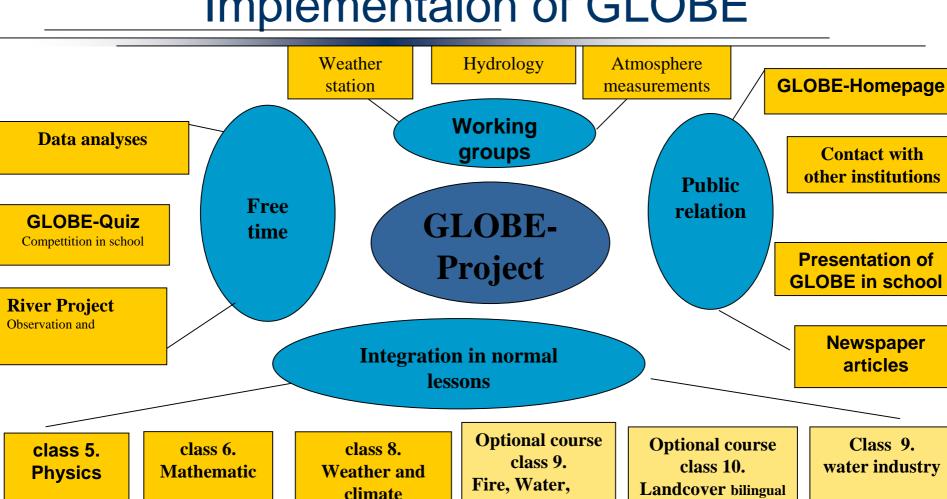




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GLOBE Germany

## Implementaion of GLOBE



Earth, Air





## International study in cooperation

#### Use of Satellite images in school

#### Level



#### **Possible topics**

- Ozone hole,
- Climate change,
- Change detection, ....



- Destruction of tropical rainforest,
- Desertification,
- Land cover and land use change, .....



- Changes of Infrastructure
- Mining
- Biotope structures, ....









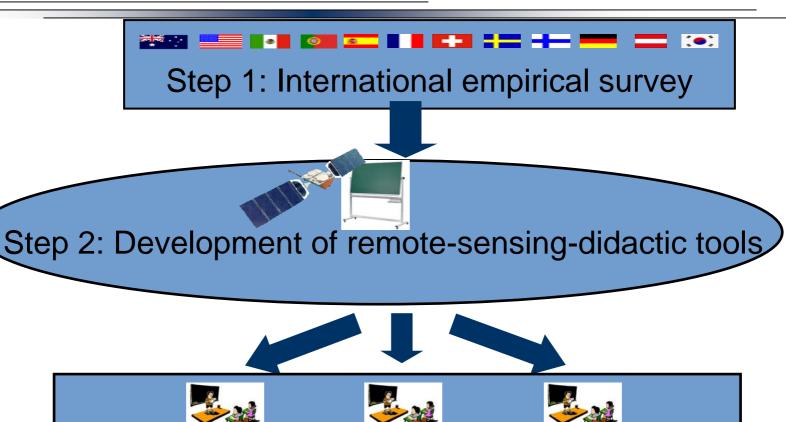






German

### Schedule









Step 3: Evaluation in schools





## The Satellite Image Learning Center (SILC)





## GLOBE in Germany

